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CENTRAL INTELLIGENCE AGENCY

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COUNTRY USSR

SUBJECT      Comments on Soviet Solar Physicists and  
                 Their Published Research

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THIS IS UNEVALUATED INFORMATION

1. From Soviet published research in solar physics, there are only two important Soviet theoretical solar physicists, I. S. Shklovsky, and (fnu) Mustel.\* Mr. Shklovsky has specialized in the corona since 1946 when his name first appeared in publications. He seems very much interested in the high temperature of the corona and in its origin, and has published a little on the physical state of the corona. The problem is to observe emission lines corresponding to the elements and then interpret the intensity of the line in terms of the corona effect. He has done no observational work himself and has always credited his sources of observations. An excellent background in electrodynamics is required for this type of work.
2. There is a marked similarity in the methods of observation of the coronas and observations of fission bomb explosions. The temperatures are similar although the pressures are lower in solar observations.
3. Mrs. E. J.\* Bugoslavskaya has been active in eclipse expeditions dating back to 1936. Her publications have been primarily concerned with studying photographs of the corona and in making descriptions. Her descriptions and measurements are unique.
4. Soviet measurements of the absolute brightness of the corona do not agree with those of other countries. The Western explanation of this discrepancy is that poor observations are accountable; however, the reservation must be made that there is a possibility that everyone is out of step but the Soviets. A movement of rays in the corona at speeds of up to 45 kilometers per second has been reported by the Soviets. Measurement of this movement is possible only when there are two observation stations which can photograph the corona at different stages during the eclipse. The manifestation of this movement is visible only on the photographic negatives which have not been made available to the Western World for review.

\* E.R. MUSTEL' - CRIMEAN ASTROPHYSICS OBSERVATORY - Sov. JOURNAL OF SCIENCE; P. 573 - ED.  
\* PROBABLY E.I. BUCOSANUSAYA - SEE E.M.S. P. 124 - ED.

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5. Mustel has collaborated with Andrew B. Severny on solar flares. [redacted]  
 25X1 [redacted] the observational work involved is poor but that the theoretical work by  
 25X1 Mustel is outstanding. It is unfortunate that his superior ability is wasted.  
 25X1 In a paper on "Emissions of Hydrogen Alpha", a basic instrument correction was  
 not applied, thus invalidating the very good theoretical interpretation.
6. In the field of solar physics, the Soviet scientists have devoted much more effort  
 to transient phenomena than to steady state phenomena. This may be because of a  
 lack of the finer instrumentation required for steady state phenomena. It is  
 important to note t h a t only transient phenomena have terrestrial effect.  
 There have been no Soviet publications relating to terrestrial effects of solar  
 phenomena. It is possible that Soviet solar physics work is strictly divided,  
 one set for publication and another for private use.
7. Several Soviet solar physicists visited my observatory in 1946 and were bug-eyed  
 at the quality of our equipment. Detailed descriptions of US observatories are  
 freely available, but top notch engineering and machine tool work is required to  
 translate the plans into observatories. [redacted]  
 25X1 [redacted] one of the Soviet solar physicists  
 who [redacted] he recently had been assigned some fifty observers. The Soviet physicist  
 said that he had a problem in using these assistants profitably but that he would  
 25X1 probably initiate a mass project on blink comparators to use these people. This  
 reveals an astonishing oversight on the part of the Soviet astronomical planners.  
 25X1 Apparently masses of astronomers have been trained without a comparable expenditure  
 on new equipment. A top-notch observatory could be built for the equivalent of  
 US \$500 thousand to US \$ one million, which should not be outlandish in view of  
 the apparently large expenditure for training of astronomers.

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